allowing the emitters to last longer. The annealing process, among other benefits, helps to decrease the resistance of contacts of dissimilar metals thereby increasing the current flow to the emitters. Examination of the annealed emitters reveals that the cathode layer has nano-porous opening on the order of less than 200 nanometers in at least one direction of length, width, or diameter.

In the Abstract:

Please substitute the following for the abstract:

An emitter has an electron supply layer and a silicon-based dielectric layer formed on the electron supply layer. The silicon-based dielectric layer is preferably less than about 500 Angstroms. Optionally, an insulator layer is formed on the electron supply layer and has openings defined within which the silicon-based dielectric layer is formed. A cathode layer is formed on the silicon-based dielectric layer to provide a surface for energy emissions of electrons and/or photons. Preferably, the emitter is subjected to an annealing process thereby increasing the supply of electrons tunneled from the electron supply layer to the cathode layer.

In the Claims:

1. (Amended) A tunneling emitter, comprising:

an electron supply;

a silicon-based dielectric layer disposed on the electron supply; and

a cathode layer disposed on the silicon-based dielectric layer;

wherein the electron supply, silicon-based dielectric layer, and cathode layer have been subjected to an annealing process to create nano-porous openings in the cathode layer.

6. (Amended) The emitter of claim 1 operable to provide an emission current of greater than 1 x 10^0 Amps per square centimeter.

15. (Amended) A storage device, comprising: